

REMARKS

Claims 1, 3 and 5-8 are presented for consideration on the merits. Claims 9, 10 and 12, withdrawn from consideration, may be canceled by Examiner's Amendment without prejudice to applicants' right to file a divisional application directed thereto, when the present application is otherwise in condition for allowance.

Of the claims considered on the merits, claim 1 is independent, and claims 3 and 5-8 are dependent.

Further and favorable consideration of the application is respectfully requested on the basis of the claims as amended and these remarks.

This confirms a telephone conversation with the Examiner in which it was noted that the oath or declaration required in section 1 on page 2 of the Office Action was submitted with applicants' amendment mailed January 24, 2002. It is understood that, upon checking the file, the Examiner confirmed that a properly executed declaration acknowledging the filing of the PCT application has been submitted and that no further declaration is required.

A one-paragraph abstract is submitted herewith in accordance with the requirement

on page 3 of the Office Action.

The claims have all been rejected under 35 U.S.C. §103(a). Each rejection depends in part upon any of four Japanese patent publications of Yuka, namely '329, '870, '192 and '609. In the case of claims 1, 3, 5 and 6, three separate rejections respectively depend upon those patents in view of a newly cited U.S. patent to Taylor No. 4,292,105, a newly cited U.S. patent to Benzinger No. 3,617,613, and a newly cited U.S. patent to Casadevall No. 3,960,626. In the case of claims 6-8, a rejection depends upon a U.S. patent to Franz et al. No. 3,922,459 in view of the same Japanese patent publications, and in the case of claims 1, 3 and 5-8 a rejection depends upon a U.S. patent to Burke No. 3,619,342 in view of the same Japanese patent publications.

The rejections are respectfully traversed. All of the claims are directed to a material to be molded comprising a porous material in which a phenolic resin which is a condensating polymer of a phenolic compound and an aldehyde and/or aldehyde donor is impregnated. The phenolic resin is at least partially sulfomethylated and/or sulfimethylated and the phenolic resin is at B-stage.

The invention as defined in the claims as now presented is neither disclosed nor suggested by the documents relied upon.

Yuka '329 discloses a hardened material of a mixture of hemp fiber and other fiber and polyphenol-aldehyde condensate binding said fiber(s). However, polyphenol-aldehyde condensate in the hardened material is not at B-stage but completely hardened. Moreover, the polyphenol-aldehyde condensate is not impregnated in the porous material but mixed in the fiber.

Yuka '870 discloses a porous material in which a mixture of phenol-aldehyde pre-condensation polymer and uronic compound is impregnated. This reference does not disclose that the pre-condensation polymer is at B-stage. In this reference, a long storage life is ensured by mixing a uronic compound in the phenol-aldehyde pre-condensation polymer as a hardener.

Yuka '092 discloses a porous material in which a mixture of a urea compound and a phenol-aldehyde pre-condensation polymer is impregnated. This reference does not disclose that the phenol-aldehyde pre-condensation polymer in the mixture is at B-stage. In this reference, a long storage life is ensured by mixing the urea compound in the phenol-aldehyde pre-condensation polymer as a hardener.

Yuka '609 discloses a porous material comprising a sulfomethylated co-condensate of mono phenol aldehyde condensate and polyphenol-aldehyde condensate. This reference does not disclose that the co-condensate is at B-stage. In this reference, a long storage life is ensured by sulfomethylation of the co-condensate.

In conclusion, these references do not disclose that a phenolic compound impregnated in a porous material is in B-stage.

The Taylor patent (US 4,292,105) discloses a fibrous textile material in which an aqueous dispersion of a powdered plastic resin is impregnated. The powdered plastic resin is a thermoplastic resin such as a polysulfone resin, polypropylene resin, polyester resin, polyphenylene sulfide resin, or a thermosetting resin such as a polyimide resin. Although the Taylor patent discloses impregnating a thermosetting resin in a fibrous textile material (porous material), no phenolic resin as a thermosetting resin is disclosed. Accordingly the Taylor patent provides no means to ensure both a long storage life and a good moldability. This reference differs quite significantly from the present invention. Note that in EXAMPLE 6, using thermosetting polyimide resin "Kerimid," the coated (impregnated) cloth is dried at 100°C and, after drying, hot-pressed without storage. Accordingly, this EXAMPLE provides no means to ensure a long storage life. Of course putting at B-stage is meaningless for a thermosetting polyimide resin.

The Casadevall patent (US 3,960,626) discloses fibers in which high temperature phenolic resin is impregnated and partially cured to the so-called "B-stage" to facilitate handling. While this reference discloses pre-impregnated fibers, it has not disclose porous material to be molded as in the present invention and further does not disclose adding an aldehyde and/or aldehyde donor together with a phenolic resin. In the present invention, aldehyde and/or aldehyde donor is(are) added in the phenolic resin so that after molding

phenolic resin at B-stage in the molded material is completely cured to have good dimensional stability and heat resistance (see page 19 line 32 to page 20 line 1). It should be noted that this reference does not concern "molding."

The Benzinger patent (US 3,617,613) discloses a punchable printed circuit board base laminate formed by laminating thermosetting resin impregnated woven glass fiber sheet. The thermosetting resin is epoxy resin (column 2 line 68 to 69); no phenolic resin is disclosed as thermosetting resin impregnated in woven glass fiber sheet.

The Franz reference (US 3,922,459) discloses a formed substrate comprising a web of fibers. The substrate is coated with a coating of a condensation polymer of formaldehyde with cresol or phenol. The patent discloses a formed substrate in which phenol formaldehyde and cresol formaldehyde resin solutions are impregnated. This reference does not disclose that the resin is at B-stage.

The Burke reference (US 3,619,342) discloses a corrugated cellulosic sheet member containing aminoplast containing phenol-aldehyde resin system or modified phenol-aldehyde resin system. The phenol-aldehyde resins are not at B-stage.

The Le Blanc reference (US 3,617,429) is to similar effect.

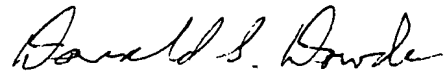
As a conclusion, putting phenolic compound impregnated in a porous material at B-stage becomes remarkably important when the porous material is molded. The phenolic

compound at B-stage provides good moldability, good dimensional stability and a long storage life. Accordingly, the present invention is not obvious from disclosures of the documents relied upon in the Office Action.

For the reasons stated, it is respectfully requested that the Examiner enter this amendment, withdraw the outstanding rejections under 35 U.S.C. §103(a), and issue a formal notice of allowance.

If a telephone interview would expedite the prosecution of the application, the Examiner is invited to call undersigned counsel.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claim 1 has been amended as follows:

--1. (Amended) A material to be molded comprising a porous material in which a phenolic resin which is a condensating polymer of a phenolic compound and an aldehyde and/or aldehyde donor is impregnated, wherein said phenolic resin is at least partially sulfomethylated and/or sulfimethylated and said phenolic resin is at B-stage.--

IN THE ABSTRACT

--[An object of the present invention is to provide a material to be molded having a long storage life and good moldability and give a molded material having a good heat resistance.

To attain said object, the Present invention provides a material to be molded consisting of a porous material in which a thermoplastic resin is impregnated and further the present invention provides a manufacturing method of said material to be molded comprising impregnating a precondensation polymer of a thermosetting resin, heating and drying said porous material impregnating said thermosetting resin to condensate slightly to make it at B-stage] A material to be molded comprises a porous material in which a phenolic resin which is a condensating polymer of a phenolic compound and an aldehyde and/or aldehyde donor is impregnated. The phenolic resin is at least partially sulfomethylated and/or sulfimethylated and the phenolic resin is at B-stage.--